REMARKS

The Telephone Interview

Examiner Rajguru is thanked for the telephone interview on May 31, 2005. The undersigned requested clarification of what evidence would be persuasive to overcome the references cited. The Examiner indicated that he would require quantitative data to show that previous attempts to color mannequins were not satisfactory. Such quantitative data is presented herewith. It is noted that the Interview Summary furnished by the Examiner for the telephone interview of April 15, 2005 states: "It was agreed that at this stage, the Examiner will issue an office action and thereafter any amendments to the claims will be decided by the Attorney and the Inventor." Most of the amendments being presented herein were discussed with the Examiner in that telephone interview. It is believed these new amendments will place the application in condition for allowance.

The Amendments

Claims 1 and 29 have been amended to specify molded articles selected from the group consisting of mannequins, frames, urns, fixtures, furniture, display props and garden furniture. Support is found at page 3, paragraph 1 of the specification. Dependent claims have been amended to specify molded articles for better antecedent basis. Claims 1 and 29 have been amended to specify "a selected color." Support is found in the last paragraph of page 6. Claim 1 has also been amended to specify an izod impact energy of about 2 ft. lb./inch or more. Support is found in the first full paragraph on page 13. Claim 1 has been further amended to delete the clause, "having a gel profile which is substantially flat for the first half of the gelling period," as the Examiner has not accorded patentable weight to this clause. Claim 46 has been canceled and its limitation that the molded article is hollow has been incorporated into claims 1 and 29. Claims 3-9 have been made dependent on claim 1 instead of claim 2 since the Examiner has not accorded patentable weight to the limitation of claim 2. Claims 9-11 have been amended to change "polymer mix" to "material entering a mold in which the article is molded." Support is found in the last paragraph on page 1 to support the fact that the articles are molded in a mold and in the second full paragraph

of page 12 where "polymer mix" and "material entering the mold" are used interchangeably. "Izod impact score" has been changed to "izod impact energy" for consistency.

Claims 1-29 and 47 are pending in this application.

The Rejection Under Section 112, Second Paragraph

Claims 9-11 have been rejected under Section 112, Second Paragraph. The Examiner states that the claims are vague in reciting "polymer mix." This rejection is believed to be unfounded as the terms "polymer mix" and "material entering the mold" are used interchangeably in the specification (see second full paragraph of page 12). Nevertheless, to expedite prosecution, claims 9-11 have been amended to specify "material entering the mold" rather than "polymer mix." Withdrawal of the rejection is respectfully requested.

The Obviousness Rejection over Graefe (USP 5,002,475) in view of Kennedy et al. (USP 6,290,614) and Hirai et al. (USP 4,367,307)

Claims 1-29 have been rejected over Graefe in view of Kennedy et al. and Hirai et al. The Office Action refers to the office action of July 22 for the basis of this rejection. In that Office Action, the Examiner characterized the references as follows:

> Graefe discloses reaction injection molding apparatus, which is used to mold a shaped article from a polymerizable flowable resin-forming composition (abstract). One such composition has a thermosetting resin such as a polyurethane elastomer of viscosity from 50 to 10,000 centipoises (column 1, lines 49-59; column 4, lines 41-44; column 10, lines 24 and 25).
>
> Graefe does not mention specifically organic pigment or dye (of instant claim 8) and colors (of instant claims 25-28).
>
> Kennedy uses white pigment with polyurethane (column 2, lines 42-51).
>
> Hirai uses brown pigment with polyurethane elastomer (column 13, lines 45-45).

Therefore it would have been obvious to use in the composition of Graefe, (a) white pigment (of Kennedy) or (b) brown pigment (of Hirai) or any one or more of other pigments to impart specific color to the molded form or article.

It is noted that prior art is silent about certain limitations of some of above claims.

Since Graefe teaches mixing of colorants and other ingredients, it is reasonable to infer that the mixing is done uniformly throughout the mass. It is also obvious to use a pigment or dye of a certain hardness to optimize the appearance and texture of surface of the molded article. It is also obvious (a) to adjust abrasion resistance of molded article so that an protruding material or flash can be removed by grinding with a sand paper (instant claim 12), (b) to adjust the composition to achieve certain impact strength (instant claim 13) and (c) to adjust certain physical properties (of instant claims 14-23).

The Examiner points to the following passages in Graefe:

(1) column 1, lines 8-11:

This invention relates to the manufacture of shaped articles from flowable polymerizable resin-forming compositions employing reaction injection molding apparatus and techniques.

(2) column 10, lines 24-25:

a thermosetting polyurethane elastomer-forming composition as previously described.

(3) column 4, lines 41-44:

It is a particular object of this invention to provide a substantially bubble or **void-free** reaction injection molded article formed from a thermosetting resin such as a polyurethane elastomer [emphasis added].

and

(4) column 1, lines 49-59:

A typical flowable polyurethane resin-forming composition is prepared by the high-speed mixing of an isocyanate-reactive liquid polymer such as a polyether or polyester glycol, triol or tetrol, amine-terminated polyether,

> hydroxyl-terminated polybutadiene, etc. and mixtures thereof, an organic polyisocyanate, a chain extender, and, optionally, one or other components such as a catalyst, filler, **colorants**, etc. to provide a homogenous liquid of relatively low viscosity, e.g., from about 50 to about 10,000 centipoises, and preferably from about 500 to about 5,000 centipoises [Emphasis added].

The first two passages are cited for teaching molded articles. The third passage is cited for teaching a polyurethane elastomer-forming composition. The fourth passage is believed to have been cited for its disclosure of the use of colorants.

Note that the Graefe reference contains no other reference to colorants, no enabling disclosure of how to mold a hollow object, and no mention whatsoever of izod impact energy (a measure of brittleness). Also Graefe does not recognize the problem solved by the present invention, namely the difficulty in making hollow molded articles the size of mannequins and other large objects and achieving a uniform color throughout while preserving important physical properties such as izod impact energy within acceptable ranges.

The secondary references do not supply these deficiencies. Kennedy et al. discloses coating powders for forming films. Hirai et al. discloses a polyurethane composition suitable for use as a component of artificial leather or as a coating material for fabrics. Hirai et al. discloses obtaining a uniform color throughout a film, but not throughout a large molded article as is presently claimed. Kennedy et al. is relied upon only for its teaching of white pigment with polyurethane. Hirai et al. is relied upon only for its suggestion to use brown pigment.

The Graefe process is designed to avoid formation of hollows or voids (see, *e.g.,* col. 4, lines 41-44), whereas the present invention claims a hollow molded article. Thus the Graefe patent teaches against the present invention. It is well settled that a reference that teaches against a claimed invention may not be used to formulate an obviousness rejection. (See, *e.g., Mitsubishi Elec. Corp. v. Ampex Corp.* 190 F.3d 1300, 51 U.S.P.Q.2d 1910 (CAFC 1999)

Further, the Graefe reference does not enable one skilled in the art to make molded articles that are hollow. As set forth in the Second Barber Declaration submitted herewith, it is not possible using injection molding, which is the process disclosed in Graefe, to mold a hollow article. "Hollow" objects are defined herein as those that "have a void volume inside" (page 7, third full paragraph). See also the definition of Figure 1 on page 5 and Figure 1 showing that the "hollow" articles of this invention have a void volume completely surrounded by the outer shell of the article. It is possible to separately mold two halves of a hollow object using injection molding, but the halves must then be glued together. It is not possible to actually mold a hollow object by injection molding. Graefe fails to teach any process by which a hollow object can be molded and therefore does not enable the present invention. It is well settled that non-enabling art cannot be properly cited in a rejection. *Elan Pharmaceuticals, Inc. and Athena Neurosciences, Inc. v. Mayo Foundation for Medical Education and Research,* 346 F.3d 1051, 68 U.S.P.Q.2d 1373 (CAFC 2003). Therefore, Graefe is not properly cited as prior art.

Moreover, none of the references disclose the problem solved by the present invention. These references do not even recognize such a problem. The fact that the existence of this problem is not obvious is proved by the fact that the Examiner in his Office Actions has repeatedly asserted that it would be obvious from the teachings of the prior art to make a molded article having a uniform color throughout. See the Examiner's language quoted above: "Since Graefe teaches mixing of colorants and other ingredients, it is reasonable to infer that the mixing is done uniformly throughout the mass."

However, Applicants were the first to discover that a problem existed in being able to obtain a uniform color throughout a mannequin or other large molded article while still retaining the necessary physical properties, such as izod impact energy. As stated in the Second Barber Declaration submitted herewith, Applicants were the first to discover the problem that when making the hollow, mannequin-sized objects claimed

desired physical properties, in particular izod impact energy, as claimed herein, that this problem was not obvious, and that the discovery of a problem not recognized in the prior art is an act of invention.

None of the secondary references provide the missing elements of Graefe. Kennedy et al. discloses coating powders for forming films. Hirai et al. discloses a polyurethane composition suitable for use as a component of artificial leather or as a coating material for fabrics. These references fail to teach hollow molded articles, the need for uniform coloring, or the need for acceptable izod impact energy values so that the molded articles will not be unacceptably brittle.

The Examiner states that it is obvious "to adjust the composition to achieve a certain impact strength . . . and . . . to adjust physical properties . . . ." This can only be true if the prior art recognized that degradation of physical properties such as izod impact energy occurs when adding pigment to achieve a uniform color throughout. Such, however, is not the case. The references neither disclose nor suggest this problem. Applicants were the first to discover this non-obvious problem. The discovery of a previously-unknown problem is as much a part of an invention as the discovery of a solution, and must be considered in evaluating the obviousness of an invention. (See *Removal Co. v. U.S. Int'l Trade Comm'n, supra,* and the other decisions discussed above.)

Further, the present invention is not obvious because, as shown in the first Barber Declaration (of record), there has been a long-felt need I the art for mannequins having a uniform color throughout their material so that they do not need to be painted and so that chips and other damage to the surface will not be readily apparent.

herein, it was impossible to achieve a uniform selected color throughout the material simply by the obvious expedient of adding a desired pigment to an uncolored polymer mix formula that had previously provided a molded article with the desired physical properties. Thus Applicants discovered and solved a non-obvious problem in the art. It is well-settled that discovery of an unknown problem is as much a part of invention as discovery of a solution to a known problem. (See, *e.g., Solder Removal Co. v. U.S. Int'l Trade Comm'n*, 582 F.2d 628, 632, 199 USPQ 129 (CCPA 1978) ("The ALJ appears to have viewed arguments that an invention solved a problem not previously recognized, and that nonobviousness may be evidenced by discovery of a problem source, as irrelevant. That view would be incorrect." [citing *In re Sponnoble*, 405 F.2d 578, 585, 56 CCPA 823, 832-33, 160 USPQ 237, 243 (1969); *In re Linnert*, 309 F.2d 498, 502, 50 CCPA 753, 758, 135 USPQ 307, 310 (1962); ("nothing in the cited references in any way suggests a prior art recognition of the problem or its cause and hence could not and did not suggest any solution of this problem"), *In re Antonson*, 272 F.2d 948, 949, 47 CCPA 740, 741-42, 124 USPQ 132, 133 (1959) ("In cases of this kind it must not be lost sight of, as pointed out by the Supreme Court in *Eibel Process Co. v. Minnesota & Ontario Paper Co.,* 261 U.S. 45, 67, 43 S.Ct. 322, 67 L.Ed. 523, that the inventive act which entitles an applicant to a patent resides as well in the discovery of the source of trouble as in the application of the remedy")].

It has been shown above that the Graefe reference teaches against the hollow molded articles of the claimed invention and that a reference that teaches against a claimed article cannot be properly cited to formulate an obviousness rejection.

It has been shown above that the Graefe reference does not enable the claimed hollow objects of the present invention and that a reference that does not enable a claimed article cannot properly be cited as prior art.

It has been shown above that the Graefe reference does not recognize the problem of achieving uniform color throughout a hollow molded object while maintaining

Conclusion

It is believed that with this Amendment the application is now in condition for allowance and passage to issuance is respectfully requested.

If Examiner Nutter is not persuaded of the patentability of the present claims, a telephone interview is respectfully requested to discuss possible alternative claim language.

A Second Declaration of inventor James D. Barber is submitted herewith.

This amendment is accompanied by a Petition for Extension of Time (three months) and a check in the amount of $510.00 as required by 37 C.F.R. 1.17. It is believed that this amendment does not necessitate the payment of any additional fees under 37 C.F.R. 1.16-1.17. If this amount is incorrect, please charge any deficiency or credit any overpayment under the foregoing rules to deposit account no. 07-1969.

Respectfully submitted,

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